

Having described the invention, the following is claimed:

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1. Apparatus for helping to protect an occupant of a vehicle that has a side structure and a roof, said apparatus comprising:

an inflatable vehicle occupant protection device that is inflatable in a direction away from the vehicle roof into a position between the side structure of the vehicle and a vehicle occupant, said inflatable vehicle occupant protection device comprising overlying panels that are interconnected along at least a portion of a perimeter of said inflatable vehicle occupant protection device to define an inflatable volume of said inflatable vehicle occupant protection device, said inflatable vehicle occupant protection device when inflated having a predetermined thickness measured between overlying points on said overlying panels at a location where the head of an occupant may contact said inflatable vehicle occupant protection device; and

an inflation fluid source that provides inflation fluid to said inflatable volume for inflating said inflatable vehicle occupant protection device, said inflation fluid in said inflatable vehicle occupant protection device being pressurized to a predetermined pressure when said inflatable vehicle

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occupant protection device is inflated, said  
predetermined pressure being determined as a function  
of said predetermined thickness of said inflatable  
vehicle occupant protection device..

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2. Apparatus as defined in claim 1, wherein said  
predetermined pressure is a function of said  
predetermined thickness according to the formula:

$$P = (4.2 \times 10^7) T^{-2.8};$$

Wherein P represents said predetermined pressure  
expressed in kilopascals and T represents said  
predetermined thickness expressed in millimeters.

3. Apparatus as defined in claim 2, wherein said  
predetermined thickness is between 100-150 millimeters.

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4. Apparatus as defined in claim 3, wherein said  
predetermined pressure is between 30-110 kilopascals.

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5. Apparatus as defined in claim 2, wherein said  
predetermined thickness is between 120-150 millimeters.

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6. Apparatus as defined in claim 5, wherein said  
predetermined pressure is between 30-65 kilopascals.

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7. Apparatus as defined in claim 2, wherein said inflatable volume is between 20-45 liters.

8. Apparatus as defined in claim 1, wherein said predetermined pressure is a function of said predetermined thickness according to the formula:

$$P = (3.0 \times 10^5) T^{-1.92};$$

Wherein P represents said predetermined pressure expressed in kilopascals and T represents said predetermined thickness expressed in millimeters.

9. Apparatus as defined in claim 8, wherein said predetermined thickness is between 100-150 millimeters.

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10. Apparatus as defined in claim 9, wherein said predetermined pressure is between 13-43 kilopascals.

11. Apparatus as defined in claim 8, wherein said predetermined thickness is between 120-150 millimeters.

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12. Apparatus as defined in claim 11, wherein said predetermined pressure is between 13-20 kilopascals.

13. Apparatus as defined in claim 8 wherein said inflatable volume is between 20-45 liters.

14. Apparatus as defined in claim 1, wherein said inflatable vehicle occupant protection device is an inflatable curtain having a stored position extending along the side structure adjacent to the vehicle roof.

15. Apparatus as defined in claim 14, wherein said overlying panels are interconnected to define inflatable areas of said inflatable curtain, said predetermined thickness being measured between said overlying panels within said inflatable areas.

16. Apparatus as defined in claim 14, wherein said inflatable curtain when inflated extends along the side structure of the vehicle between an A pillar and a C pillar of the vehicle.

17. Apparatus as defined in claim 14, wherein said inflatable curtain, when inflated, overlies at least a portion of an A pillar, a B pillar and a C pillar of the vehicle.

18. Apparatus as defined in claim 14, further including a fill tube having a portion located in said inflatable curtain, said inflation fluid source being in fluid communication with said fill tube, said inflation fluid source, when actuated, providing inflation fluid to said fill tube, said fill tube directing said inflation fluid into said inflatable curtain to inflate said inflatable curtain.

19. Apparatus as defined in claim 1, further comprising a sensor for sensing a vehicle condition for which deployment of said inflatable vehicle occupant protection device is desired, said sensor actuating said inflation fluid source to provide inflation fluid to inflate said inflatable vehicle occupant protection device.

20. Apparatus as defined in claim 1, wherein said inflation fluid source comprises an inflator which is actuatable to inflate said inflatable vehicle occupant protection device.

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